

# NEW LONDON NAVAL SUBMARINE BASE

## GROTON, CONNECTICUT

**Engineering Field Division/Activity:** NORTHDTV

**Major Claimant:** CINCLANTFLT

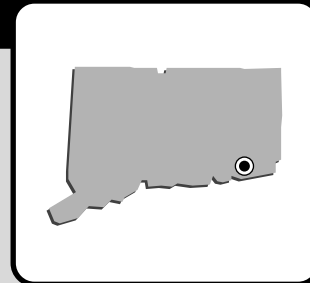
**Size:** 547 Acres

**Funding to Date:** \$25,505,000

**Estimated Funding to Complete:** \$78,667,000

**Base Mission:** Homeports submarines, submarine intermediate maintenance and repairs, submarine training, submarine medical research

**Contaminants:** Construction debris, fuel oils, incinerator ash, PCBs, pesticides, solvents, acids



### Number of Sites:

**CERCLA:** 24  
**RCRA Corrective Action:** 0  
**RCRA UST:** 2  
**Total Sites:** 26

### Relative Risk Ranking of Sites:

**High:** 15  
**Medium:** 5  
**Low:** 4  
**Not Evaluated:** 0  
**Response Complete:** 2  
**Total Sites:** 26

**NPL**

## EXECUTIVE SUMMARY

New London NSB is located primarily in the town of Groton and partially in the town of Ledyard, Connecticut. The base performs services to the fleet including homeporting of submarines, maintenance and repair of submarines, submarine training, and medical care and research in the field of submarine medicine. The base also has areas used for housing and community support.

NSB is located along the eastern bank of the Thames River and geographically has a hilly upland area with swamps and rocky ledges, and a lower area that is an old river terrace. All surface drainage and groundwater flow is into the Thames River which eventually discharges into Long Island Sound. Thames River is a tidal estuary and wetlands. Eighty acres of wetlands is on the NSB and has visible evidence of contamination. This area may be habitat for rare, threatened, or endangered species. Immediately adjacent to the north of NSB is undeveloped land with scattered residential use. Further north, the land is predominantly residential. Almost the entire eastern boundary of NSB is along Route 12, a major north/south arterial highway. East of Route 12 there is undeveloped land with scattered residential use. To the northeast of Route 12 there is a mixture of commercial, residential, and industrial uses, as well as wetlands. To the southwest of Route 12 are acres of protected wetlands. Crystal Lake Road runs along the southern boundary of NSB. The land south of NSB is primarily residential and commercial with recreational and open space areas.

Drinking water supplies come from upgradient reservoirs. The main contaminant migration pathways are groundwater and surface water directly going to the Thames River. Receptors are human and ecological. NSB was placed on the National Priorities List (NPL) due to pesticide contamination in soil and groundwater at Site 2 (Area A Landfill) which is adjacent to a large wetland. Materials disposed of at the landfill include scrap wood, metal, waste chemicals, waste acid, and drums containing solvents. Transformers and electrical switches were observed on the concrete pad built for industrial waste storage. Based on analysis of the soils, it has been determined that they could pose a threat to workers at the landfill. In FY93, a fence was installed at the

landfill and downstream water courses to prevent people from being exposed to contaminants or having any direct contact with contaminated surface water and sediments in these areas. Even though the area is fenced off and access is restricted, human and ecological receptors are still present. The landfill at Site 2 will be capped in FY97 to prevent exposure from direct contact.

Other contaminated sites at NSB include storage areas, disposal areas, Underground Storage Tanks (USTs), aboveground storage tanks, and fuel lines. USTs currently in use at Navy Exchange service stations on NSB were recently upgraded with leak detection equipment. Other pollution prevention technologies are in place to prevent further contamination. A Federal Facility Agreement (FFA) between the Department of the Navy (DON), the EPA and the State of Connecticut was signed in January 1995.

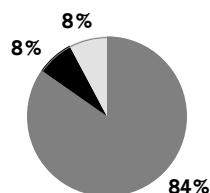
A Technical Review Committee (TRC) was formed in 1989. In FY94, the TRC was converted to a Restoration Advisory Board (RAB) and the first formal RAB meeting was held. The RAB now meets quarterly. The Community Relations Plan (CRP) was completed in January 1994. Information Repositories, containing copies of the Administrative Record documents, are located in Groton and Ledyard, and at the New London NSB.

At the end of FY95, the 22 CERCLA sites at NSB were in the study phase. Two CERCLA sites will not be considered Site Closeout (SCO), although they are Response Complete (RC), until they are delisted from the NPL. The two UST sites were in the cleanup phase.

Several removal actions and Interim Remedial Actions (IRAs) have been completed. In FY91, a removal action at Site 8 (Goss Cove Landfill) consisted of removing and disposing of 19 gas cylinders that were uncovered during the excavation of a utility trench. In FY94, a removal action at Site 6 consisted of removing lead and soil contaminated with the chemical additive PCB, followed by capping. A removal action at Site 15 consisted of removing lead-contaminated soil. In FY95, at Site 9, a removal action consisted of removing oil contaminated with the chemical additive PCB, sludge, and water from a waste oil tank, cleaning the tank and abandoning-in-place (filling with clean sand).

The Navy used an innovative technology to solidify and stabilize the lead-contaminated solids at Site 17 in FY94. A solidifying mixture of Portland Cement, mono-ammonium phosphate, and water was mixed with the lead-contaminated soil and achieved the treatment objectives. Another innovative technology, air sparging is in operation at NSB. Remedial Action (RA) began in FY95 at USTs 1 and 2 to install an air sparging/soil vapor extraction system to remove gasoline from the subsurface and bioremediate less volatile (diesel) fuels. The air sparging system is expected to operate for three years.

### Current Status Of Sites



■ Studies Underway	22
■ Cleanups Underway	2
□ Response Complete	2
<b>TOTALS</b>	<b>26</b>

## NEW LONDON NSB RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - New London NSB is situated along the eastern bank of the Thames River. All surface drainage from NSB is into the river. Surface runoff from and storm drainage is directly into the river. Streams which receive drainage from areas of NSB also discharge directly into the river. Groundwater is generally within a depth of 10 feet. In the lower base, groundwater is often within two or three feet of the surface. Groundwater from NSB discharges into the Thames River. NSB received its water supply from the city of Groton, which utilizes a series of reservoirs. These reservoirs all lie in watersheds separate from NSB.



**NATURAL RESOURCES** - Tons of fish and shellfish are privately harvested annually from the Thames River for human consumption. The majority of species are taken from the river below NSB. The most important and commonly caught species is the winter flounder, which inhabits the river year-round. A commercial fishery for eels is in this area. American Shad, Whiting and Blueback Herring may be present in numbers sufficient to allow commercial harvesting in the future.



**RISK** - A baseline ecological risk assessment is being conducted as part of the Phase II Remedial Investigation (RI). For the DOD Relative Risk Ranking System, 15 sites at New London NSB were ranked high relative risk, primarily because of groundwater and surface water contamination. Receptors are human and ecological. Five sites received medium-risk rankings, and four received low-risk rankings.

One of the high risk sites, Site 2 (Area A Landfill), is adjacent to wetlands. Materials disposed of at the landfill include scrap wood, metal, waste chemicals, waste acid, and drums containing solvents. Transformers and electrical switches were observed on the concrete pad built for industrial waste storage. Based on analysis of the soils, it has been determined that they could pose a threat to workers at the landfill. The landfill will be capped in FY97. Even though the area is fenced off and access is restricted, human and ecological receptors are still present.

At Site 3, another high risk site, contaminants of concern include the pesticides DDT, DDE, and DDD. Remedial Action (RA) will begin in FY97 at this surface disposal area. Other high risk sites have contaminants that include Volatile Organic Compounds (VOCs), petroleum products, cyanide, inorganics, and some lead contamination in both groundwater and soil. In FY94, 2,000 cubic yards of lead and soil contaminated with the chemical additive PCB were removed and replaced with clean fill at Site 6. Erosion control was upgraded along the Thames River, and the site was capped with a clay lining system protected by crushed stone and an asphalt cover.

The Agency for Toxic Substances and Disease Registry (ATSDR), in conjunction with the Navy Environmental Health Center (NEHC) did a Public Health Assessment in May 1993. Sites 2 and 3 no longer pose a threat and the ATSDR determined that the other on-base sites do not pose a public health hazard.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - NSB New London was placed on the National Priorities List (NPL) in August 1990 with a Hazard Ranking System (HRS) score of 36.53. Past disposal operations at Site 2 (Area A Landfill), past pesticide operations at an adjacent large wetland, and a series of ponds and streams downstream from the wetland, drove up the HRS score. Soil and groundwater contamination were the primary media of concern. The remedy chosen to eliminate this problem is a landfill cap.



**LEGAL AGREEMENTS** - A Federal Facility Agreement (FFA) between the Department of the Navy (DON), the EPA Region I, and the State of Connecticut Department of Environmental Protection was signed in January 1995.



**PARTNERING** - Discussions have been held with the regulatory agencies to initiate a partnering agreement.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - A Technical Review Committee (TRC) was formed in FY89 to accelerate the decision-making process. Meetings were held periodically. In FY94, the TRC was converted to a Restoration Advisory Board (RAB). The first formal RAB meeting was held in November 1994. The RAB has 12 members who meet quarterly.



**COMMUNITY RELATIONS PLAN** - The Community Relations Plan (CRP) was completed in January 1994.



**INFORMATION REPOSITORY** - Information Repositories, containing copies of the Administrative Record documents, are located in the Connecticut cities of Groton and Ledyard, and at the New London NSB.

## NEW LONDON NSB HISTORICAL PROGRESS

### FY82

**Sites 1-16** - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in 1982. Of the 16 potentially contaminated sites studied, three sites (Sites 2, 3 and 6) were recommended for further investigation. The IAS did not include a description of Sites 5, 7, 9, 12 and 16 because they were outside the scope of the Naval Assessment and Control of Installation Pollutants (NACIP) program that generated the IAS. Only eleven sites (Sites 1-4, 6, 8, 10, 11 and 13-15) were actually presented in the IAS.

### FY85

**Sites 2, 3 and 6** - A Verification Study (VS), equivalent to a Site Inspection (SI), was completed and recommended for further investigation the three sites recommended for further study in the IAS. The VS found elevated levels of metals, Volatile Organic Compounds (VOCs) and pesticides at two sites, Site 2 (Area A Landfill) and Site 3 (Over Bank Disposal Area). High concentrations of VOCs and Semi-VOCs at Site 6 were also found. Additional characterization was recommended for all three sites.

### FY90

**UST 1** - This site was discovered in the IAS and a Corrective Action Plan (CAP) for the Nautilus Park Service Station was completed.

**UST 2** - This site was discovered in the IAS. It failed a tank test in October 1989.

**Site 23** - This site was discovered in the IAS.

### FY91

**Site 8** - A removal action consisted of removing and disposing of 19 gas cylinders from the Goss Cove Landfill site. The cylinders were uncovered during the excavation of a utility trench.

**Sites 17-20 and 24** - These sites were discovered during multi-media inspection.

### FY92

**Sites 1, 3, 7, 8, 14, 15 and 18** - Step I investigations, equivalent to an SI, were performed on these seven sites as part of a Phase I Remedial Investigation (RI) report completed in August 1992. Supplemental Step I investigations were recommended for Sites 1 and 14 and corrective action for Site 18 under the Underground Storage Tank (UST) Program. This Site 18 is not to be confused with the current Site 18 in the Defense Site Environmental Restoration Tracking System (DSERTS).

**Sites 2-4, 6-8, 15 and Study Area M** - The SI Phase was completed for these sites. Study Area M is now Site 25 in DSERTS.

### FY93

**Site 2** - A fence was installed at the landfill and downstream water courses to prevent human exposure to contaminants.

### FY94

**Site 6** - A removal action was completed. The 2,000 cubic yards of lead and soil contaminated with the chemical additive PCB were removed and replaced with clean fill. Erosion control was upgraded along the Thames River, and the site was capped with a clay lining system protected by crushed stone and an asphalt cover.

**Site 15** - A removal action was completed that consisted of removing lead-contaminated soil.

**Site 17** - A removal action was completed that consisted of removing lead-contaminated soil, using an innovative technology to solidify and stabilize the lead-contaminated soils. A solidifying mixture of Portland Cement, mono-ammonium phosphate, and water was mixed with the lead-contaminated soil and achieved the treatment objectives.

**Sites 21, 22 and 25** - Three additional sites were discovered and added to the program. Site 21 is the Berth 16 Wharf, Site 22 is the Pier 33 Wharf, and Site 25 is the Lower Base Incinerator - Building 97. The Phase I SI Work Plan for these sites has been completed and the field work was completed in April 1994.

## PROGRESS DURING FISCAL YEAR 1995

### FY95

**Site 2** - A Record of Decision (ROD) was signed in September 1995, in which the Navy agreed to cap the landfill at the Area A Landfill as an Interim Remedial Action (IRA).

**Sites 6, 13 and 15** - Four removal actions were completed at these sites.

**Site 9** - A Remediation, consisting of removing oil contaminated with the chemical additive PCB, sludge, and water from a waste oil tank, cleaning the tank and abandoning-in-place (filling with clean sand), will be completed. Future actions at this site will be under Site 23.

**Site 23** - An SI was initiated at the Fuel Farm.

**Sites 1-11, 13-15 and 20** - The draft Phase II Remedial Investigation/Feasibility Study (RI/FS) was completed for these 14 sites.

**UST 1** - Remedial Action (RA) began to install a groundwater pump and treat system to contain contamination on site, and an air sparging/soil vapor extraction system to remove gasoline from the subsurface. Also, an oil-contaminated soil pile was disposed of off-site. The air sparging system is expected to operate for three years.

**UST 2** - RA began to install an air sparging/soil vapor extraction system to remove gasoline from the subsurface and bioremediate less volatile (diesel) fuels. The air sparging system is expected to operate for three years.

## PLANS FOR FISCAL YEARS 1996 AND 1997

### FY96

**Site 3** - A Feasibility Study (FS) will begin at this site.

**Site 8** - Begin the FS at this site.

### FY97

**Site 2** - Complete the construction of the landfill cap for this site.

**Site 3** - Begin removal action at the Over Bank Disposal Area at this site.

**Site 23** - Design Corrective Actions at the Fuel Farm for this site.

## NEW LONDON NSB PROGRESS AND PLANS

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	22	2						
SI	15	2						5
RI/FS	1		4	8	4		1	5
RD	1			1	1	4	4	12
RA		1			1	1	1	19
IRA	3(3)	3(4)		1(1)		1(1)		
RC	1	1					1	21
Cumulative Response Complete	4%	8%					12%	100%
UST	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
ISC	2							
INV	1							
CAP	2							
DES	2							
IMP			2					
IRA		1(1)						
RC				1	1			
Cumulative Response Complete				50%	100%			